

## Claims

1. A membrane structure comprising a tubular porous ceramic monolith having at least four tubular conduits formed within the monolith with a zeolite membrane  
5 formed on the internal surface of the conduits the zeolite membranes having an internal diameter of 5 to 9 millimetres and the ceramic monolith having an outer diameter of 20 to 25 millimetres.
2. A structure as claimed in claim 1 in which the zeolite membranes have a diameter  
10 of 6.4 millimetres.
3. A structure as claimed in claim 1 or 2 in which the ceramic monolith has an outer diameter of 20mm.
4. A structure as claimed in any one of claims 1 to 3 in which the porous ceramic  
15 monolith is formed of a sintered ceramic powder of alpha alumina, titania or zirconia.
5. A membrane structure as claimed in any one of claims 1 to 4 in which there are from 4 to 7 tubular conduits  
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6. A membrane structure as claimed in any one of claims 1 to 5 in which the porous support has an average pore size of 0.01 to 2,000 microns
7. A membrane structure as claimed in any one of claims 1 to 5 in which the porous  
25 support has an average pore size of 1 to 20 microns.
8. A membrane structure as claimed in any one of the preceding claims in which the zeolite membrane is formed by a process which comprises deposition or crystallisation from a growth medium onto the ceramic monolith.  
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9. A membrane structure as claimed in claim 8 in which the porous support is contacted with the growth medium by contacting the inner surface of the tubular conduits with the growth medium.
- 5 10. A membrane structure as claimed in claim 9 in which the porous support is pre-treated with a zeolite initiating agent.
11. A membrane structure as claimed in claim 10 in which the zeolite initiating agent is a cobalt, molybdenum or nickel oxide or particles of a zeolite.
- 10 12. A membrane structure as claimed in claim 10 in which the zeolite initiating agent is a silicic acid or polysilicic acid.
13. A membrane structure as claimed in any one of claims 10 to 12 in which the porous ceramic monolith is treated with the zeolite initiating agent by a process in which a liquid suspension of powder of the zeolite initiation agent is formed and the liquid suspension contacted with the porous support to deposit the zeolite initiation agent on the support.
- 15 14. A membrane structure as claimed in any one of the preceding claims in which after formation the membrane is treated with a surface modifying agent which cross links with the zeolite membrane to form a membrane with substantially no defects.
15. A membrane structure as claimed in claim 14 in which the surface modifying agents is silicic acid or an alkyl silicate.
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